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"AT WATER'S EDGE: RIPARIAN AREAS OF THE ARID WEST"

An educational aid in understanding the complex issues of riparian Management

USDA FOREST SERVICE
INTERMOUNTAIN REGION
OGDEN, UTAH

June 1988

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INTRODUCTION

'AT WATER'S EDGE: RIPARIAN AREAS OF THE ARID WEST'

This document represents the conceptual framework for the Natural Resource Environmental Education Project titled "At Water's Edge: Riparian Areas of the Arid West". This is the first phase of a three-part project to develop educational materials on riparian issues for target audiences identified by the Forest Service. The information presented in this document is based upon those pertinent issues as identified by the Intermountain Region, Forest Service Staffs in Ogden, Utah. This conceptual framework is to be used as the foundation for developing educational material for target audiences in the public sector.

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I. DEFINITION OF RIPARIAN ECOSYSTEM:

Riparian ecosystems are simply defined as those areas and biotic communities which are predominantly influenced by high water tables usually occurring adjacent to a water source. Because of the many possible sources of water (seeps, wet meadows, lakes, springs, and streams), riparian ecosystems are as diversified as they are widespread and will be found any place the amount of soil moisture will support riparian vegetation. They are geographically delineable as the natural land forming processes set the stage for the type of riparian area that will develop.

In the Intermountain West, riparian ecosystems comprise 2 percent to 3 percent of the total land mass, yet because of the precious nature of water, they may govern the activities which occur on the remaining 97 percent. Riparian ecosystems are more productive per unit area in terms of annual biomass of plants and animals and they offer a critical source of diversity among fisheries and wildlife species within the ecosystem.

II. VALUES OF RIPARIAN ECOSYSTEMS:

Recreational Use:

Recreational activities often occur within or near riparian ecosystems as people are naturally drawn to water. Roads and trails are often built near lakes and streams because these corridors often provide easier access routes to forest users. Outdoor enthusiasts like to camp or picnic in these areas because water is readily available for uses such as drinking, fishing, or swimming. Esthetically people enjoy the sounds, sights, and smells, of being near water. River rafters, hikers, cyclists, all terrain vehicle users, and horse packers, will all eventually find themselves within the boundary of a riparian ecosystem because of their appreciation of its qualities and its values as a part of their recreational experience. Riparian ecosystems also influence wildlife populations and the health of fisheries because of the food and shelter they provide. In addition, fishermen, hunters, and sportsmen alike are also benefited by the quality of these areas.

Commercial use:

There are many different commercial uses of riparian ecosystems. Water diversion is one of the primary activities which may occur. Many farmers depend upon diverted water to irrigate croplands and fields. Local industries depend upon diverted water for plant operations and maintenance. Municipalities also need water for domestic consumption and use.

To meet these demands, dams and reservoirs are constructed and water is often diverted from several different riparian ecosystem sources. Larger dams often generate power for use in far away urban centers.

The livestock industry uses riparian ecosystems because the presence of water and succulent vegetation offers a natural place for cattle to congregate, feed, and water. Here livestock can find relief if the surrounding terrain is rugged or find shade in hot climates and windbreaks in cold climates.

The mining and timber industries often build roads through riparian ecosystems because the more gently sloping drainages provide greater accessibility into the backcountry.

III. RIPARIAN DEPENDENT RESOURCES:

Definition:

Riparian dependent resources are those living things, such as fish, vegetation, wildlife, and terrestrial and aquatic insects, that depend upon riparian ecosystems for their existence either throughout their lifetime or for at least part of their life cycle.

Natural Resources Provided by Riparian Ecosystems:

Riparian ecosystems provide certain aquatic and wildlife species for basic habitat components: water, food, cover, and space. These elements are essential to maintain viable populations. Within many other habitats, there are large quantities of these individual components which remain essentially unused because they are spaced too far from other elements the animals require. The availability and concentration of food, water, and cover characteristics of riparian ecosystems to fish and wildlife populations contributed to their importance as a resource.

For example, in Wyoming it has been estimated that 34 percent of the terrestrial wildlife are either largely or completely dependent upon riparian ecosystems during one or more stages in their life cycle. Another example, the highest avian population densities in North America were recorded in Arizona along the Verde River and its tributaries. Evidence suggests that riparian ecosystems are the most important habitat in the Southwest. It is also clear that they provide certain fish and wildlife species substantial resource for their survival.

Dependent Resources:

Beaver, muskrats, and river otter depend directly upon riparian ecosystems to complete their life cycle. Here they can find protection from predators, nesting sites, and primary food sources such as fish. Wood ducks and other water fowl use the areas for nesting, breeding, protection, and because of the availability of food. Stream and river corridors often serve as routes through inhospitable habitats which are essential during the spring and fall migration.

Certain fish species depend directly upon riparian vegetation for the shelter that is provided from predators and for the food available from insects that also live there. Fish regularly congregate along the stream side banks which are protected by the vegetation.

Many terrestrial and aquatic insects such as beetles, mayflys, and mosquitos live most of their life cycle within the boundaries of the riparian vegetation. They deposit their eggs into the water as this is the place where each new generation hatches. They then spend their adult phase in the air and within the protection of the riparian vegetation. These insects provide a food source for fish, frogs, bats, and other small rodents.

Riparian vegetation such as willows, cottonwoods, alders, cattails and certain species of forbs and grasses depend directly upon the moisture content in the soil. This dictates the type of vegetative species that will grow. If soil moisture content decreases enough, riparian vegetation will perish and be replaced by less water dependent species.

Though many large animal species could survive without riparian ecosystems, they would be adversely effected by the loss of these areas. Large secretive animals such as wild turkey, deer, bear, and bob cat can find refuge and food in riparian ecosystems. These animals benefit greatly from the space, cover, and food such as berries, fruits, and seeds that are available here.

IV. KEY NATURAL PROCESSES IN RIPARIAN ECOSYSTEMS:

Geomorphic Development:

Basic concepts of geomorphology or the land forming processes need to be addressed since they directly influence the formation of riparian ecosystems.

Streams have developed historically with certain patterns of flow which are dictated by natural features. Features, such as parent rock (rock that is naturally occurring in an area), climate, and vegetation, interact for centuries as a riparian ecosystem develops or maintains a state of general equilibrium. If we disturb any one of these factors, we can change the entire geomorphic setting. Streams will cut new channels or alter their gradients which in turn will influence how and where they deposit their sediment loads. This change will influence the fish and wildlife habitats and riparian vegetation.

When nature can function undisturbed by human influence, there is a constant interaction that occurs between water, soil, vegetation, and wildlife. This dynamic equilibrium is slowly but constantly changing as it responds to the land forming processes and the interactions of these resources.

Stream Channel Development:

The development and movement of stream channels which affect geomorphic processes are influenced by eight variables. These include: width, depth, velocity, discharge, slope, roughness of channel materials, sediment load, and sediment size. These variables determine the type of stream that will develop which in turn will dictate the size and type of the corresponding ecosystem. Again, if any one or more of these variables change, the riparian ecosystem will respond with a change.

Riparian Vegetation:

Riparian ecosystems are very productive since they depend on a high ground water table. Over bank flows or flood flows carry nutrient-laden waters which enrich areas during the growing season. Many plant species are dependent on these conditions. Plant succession can be relatively rapid in riparian ecosystems and major changes can occur in a 10- to 20-year period. This is in contrast to common sequence of successional changes in surrounding uplands where the vegetative community changes more slowly at times requiring hundreds or even thousands of years.

If a riparian ecosystem remains unaltered it will develop a stable plant community. However, as many stream channels change their location over time, the riparian vegetation will follow and continue to reestablish itself in the zones that will support it. Because the interaction between water and vegetation in riparian ecosystems is dynamic, it responds very quickly to any alternation of the established equilibrium.

Riparian vegetation has the ability to help maintain the quality and quantity of the water resource. Vegetation can provide a buffer zone which helps to filter out sediments from both upland watersheds and areas within the ecosystem. In areas where pollutants are entering a water supply, the vegetation can act as a filter and remove contaminants. The vegetation canopy also maintains cool stream temperatures which in turn support the aquatic life. Vegetation also provides stability to both streambanks and stream channels.

Riparian vegetation acts as a buffer to both periods of high and low stream flow. Vegetation, along with their root masses and soils have the ability to absorb the water from the stream during a high flow period and as the water level in the stream drops the bank will slowly release water back into the stream supporting a more constant level of flow. In this way, areas susceptible to flooding can be reduced because the riparian vegetation moderates the water levels.

V. ACTIVITIES THAT IMPACT RIPARIAN ECOSYSTEMS AND THE EFFECTS:

A Historical Perspective:

Historically, mankind's survival and progress has been heavily dependent upon the bounties provided by riparian ecosystems. Early settlers of the Intermountain West relied on rivers and streams not only for navigation but also for the richness the riverine lands provided. Wild game and farmland were essential for successful colonization. Therefore, almost all human activity centered around water and riparian ecosystems.

Riparian ecosystems were used widely during western migration and settlement. At that time, little was known about impacts or long-term effects of human activity in these environments. Protection or management of riparian ecosystems was not a concern and certain patterns of land use developed. For example, livestock were allowed to forage along stream and river banks rather than on the adjacent hillsides. After many generations of use, many of these areas are now degraded to a point where today stream channels are cleared of the natural vegetation and are unstable and eroding. Once productive areas now offer marginal value for livestock and lack productive habitat for fish. Historic patterns such as this are difficult to change, and are often at the base of present day conflicts over land use.

Water Rights:

Water is a precious commodity in the Intermountain West and is, therefore, viewed differently here than in most other parts of the United States. As settlers continued to arrive to the Region, water rights were soon equated with property rights as this dictated whether or not a piece of land was usable.

Originally, water rights in the Intermountain West were determined by the Riparian or Common Law Doctrine. This Doctrine gave a land owner certain rights if his property was bound or crossed by surface water. This Doctrine still holds true for the eastern portion of the United States where "first in time is first in right." However, states in the Intermountain West have rejected this Doctrine completely and recognize only priority use as the basis for acquiring a water right. This concept is known as the Colorado Doctrine as it was adopted by that State. Water in the Intermountain West is, therefore, appropriated for specific use determined by priority status.

Because water rights are very difficult to obtain for many people, there has been a growing desire to divert water from National Forest land. The USDA, Forest Service retains reserved water rights in order to maintain riparian ecosystems under their jurisdiction and preserve the values for which National Forests were established by the Organic Administration Act of 1897. Values, such as watershed conservation, timber production, and the maintenance of fisheries and wildlife populations, are essential components in the management of National Forests. In order to preserve the Water Doctrine as stated in the Organic Act, the USDA, Forest Service has been filing water right claims with states where the National Forests are located.

Impacts of Present Day Activities:

Riparian areas can be used for a variety of purposes. However, improper or excess use can destroy the areas productive potential.

There are a variety of different activities that may potentially impact riparian ecosystems. Livestock overgrazing in riparian ecosystems can cause serious long-term damage, and is, in fact, currently occurring in many areas of the Western United States. This has been identified as a major cause of reduction in the productivity of fisheries and wildlife habitat. Overgrazing also degrades water quality and affects flow fluctuations. Overgrazing impacts can be detrimental to wildlife, fisheries, and water quality as they facilitate soil compaction, sedimentation, loss of bank stability, and loss of riparian habitat.

When roads are constructed in or adjacent to riparian ecosystems they have a high potential for altering the stream channel and disturbing the vegetative communities. This in turn may have long-term negative effects on fish and wildlife populations. Potential detrimental effects caused by improper road location and construction include removal of riparian vegetation, increased sediment load to streams, and alteration of the stream channels and their locations.

Timber harvesting may impact riparian ecosystems in several ways. The greatest effect from this activity is caused when roads are constructed in the stream drainages. Erosion from improperly located and constructed roads may affect sediment yield more than timber harvest activity. Timber harvest patterns and post cutting activities can result in significant changes in water quality including: dissolved solids and the chemical makeup of the water which in turn affect riparian vegetation. The removal of the natural canopy along stream margins also may affect stream temperatures by allowing increased solar radiation to reach the water. These activities can reduce or kill the number of productive fisheries and aquatic organisms.

Mining operations are sometimes associated with and responsible for the degradation of aquatic resources which affect riparian ecosystems. Destruction of aquatic and vegetative communities for stream channelization and dredging is the most obvious impact. The removal of riparian vegetation for construction increases erosion and stream sedimentation. Another impact is the flooding of riparian areas for construction of tailing ponds and water storage reservoirs. Acidic chemical leeching of mine waste and thermal pollution are other mechanisms which may degrade aquatic habitat affecting the riparian ecosystem.

The discussion of effects of recreation on riparian ecosystems includes three distinct areas of use, each of which has its own site-specific problems. Many developed campgrounds and picnic areas are built along or within riparian corridors because of the availability of water. These areas often receive the highest concentration of visitor use. Excessive numbers of forest visitors trample and kill undergrowth and compact soils as they climb over the streambanks to fish or to swim.

As these activities continue, erosion of the streambanks increases and vegetation disappears carrying with it the ability to maintain a stable streambank. Inflows carry greater sediment loads which decrease the potential for healthy fisheries and aquatic organisms.

A second area of impact in riparian ecosystems occurs where trails are built along stream and river corridors. Here the impact is often less visible than that of developed sites yet the impact can extend for miles. Excess trail use by horses, mountain bikes, all terrain vehicles, hikers, and sportsmen increases the potential for devegetation, bank erosion, and sedimentation along the water source. Conversely, in areas where there are no defined trails or where people choose to travel off established routes, the same types of impacts can occur.

The third area where recreational use may impact riparian ecosystems is in the wilderness or backcountry. Dispersed use can be less concentrated than in more urbanized or developed sites, but often areas with productive fisheries receive a high level of use. Trampling vegetation, increased erosion, and sedimentation in headwater areas can greatly affect the quality of water feeding the riparian ecosystem downstream.

Agriculture lends its own unique impacts to riparian ecosystems. In some areas, more water is used for the irrigating of croplands than for all other uses combined. In the Intermountain West where summer precipitation is low, the demands on water sources to sustain crops is high. Since riparian vegetation depends directly upon the moisture content for survival, any lowering of the stream channel or water table because of water diversion, directly affects the ability of riparian vegetation to grow. Decreased vegetation will cause increased erosion and stream sedimentation which affects the quality of riparian ecosystems.

Other impacts from agriculture occur when silt laden runoff from fields washes into streams. This causes an increase in the sediment load and can kill fish. Runoff from fields often contains chemical pollutants from pesticides and fertilizers which also pose a serious threat to the quality of stream water, ground water, and aquatic life.

One final area of impact comes from urbanization. As our population continues to increase, our demand for water diverted from riparian ecosystems will increase. Building reservoirs which catch the spring runoff divert massive amounts of water from springs, streams and rivers and eventually destroy riparian ecosystems downstream. Drilling and pumping wells, which tap ground water reservoirs, lower water tables which may influence the survival of riparian vegetation.

The lack of environmental zoning regulations that allow for land development and housing subdivisions within riparian, wetland, and flood plain areas, also eliminate this habitat and the riparian species associated with it. In general, anywhere there is construction occurring there is a chance that riparian ecosystems nearby will be affected from the diversion of water and the disturbance of the vegetation.

VI. EFFECTS OF IMPACT IN RIPARIAN ECOSYSTEMS:

Sedimentation:

The degradation or elimination of riparian ecosystems may occur from a variety of impacts. Impacts caused by improperly planned and executed farming practices, timber harvest and mining, excessive recreational use or livestock grazing, and development for commercial and private use will affect riparian vegetation in one or two ways. Vegetation will be succeeded either by plant species less able to buffer the erosional forces of water or streambanks will become void of vegetation altogether.

Increases in soil sediment loads in runoff result from both changes in vegetation along streambanks and denuded upland slopes. From these areas, tons of sediment wash into the streams and other water sources. As sediments settle to the stream bottoms they blanket spawning ground, smother fish eggs, suffocate insects, bury oxygen producing plants, and clog the gills of fish. Muddy sediment-laden water blocks sunlight, reducing both oxygen production and the ability of fish to forage for food. Sediments essentially pave stream bottoms, filling in pools and riffles thereby reducing fish habitat and fish populations.

Diminished Ground Water Recharge:

As increased sediment adds to the deposition in streams, this directly affects the ability of riparian areas to store water. Streambanks that have been denuded of riparian vegetation are no longer capable of recharging underground aquifers and flood prone streams may develop. During the drier months, without this ground water recharge ability, ground water levels become lower and discharge rates to streams and springs decrease.

Introduction of Pollutants:

Toxic chemicals and other pollutants can affect water quality for municipal consumption and industrial use. In water areas where recreation is a primary activity, the effects of chemical pollution can degrade an area sufficiently to ban recreational use.

The level of a base flow in streams is critical for aquatic habitat maintenance. Stream water quality depends on the amount of water available to dilute toxic chemicals and other pollutants. Without the filtration system provided by riparian vegetation, pollutants become more concentrated and the effects can be devastating.

Construction of Dams:

When dams and reservoirs are constructed, they significantly impact riparian ecosystems. In addition to inundating large areas of land with water, reservoirs also modify downstream behavior and habitat. Over bank flooding with sediment and nutrient deposition is essential for establishment, maintenance, and regeneration of many riparian plant species. When

these are eliminated by controlled water levels in reservoirs, both plant and animal populations downstream may suffer. Another effect that can occur is the level of stream flow may be reduced below the level needed to maintain the riparian and aquatic habitats. This may lead to the replacement of riparian vegetation by drier less desirable species.

Reduction of Riparian Vegetations:

Many species of wildlife are directly impacted by loss of riparian ecosystems as they are dependent upon the lush vegetation for food and shelter and the water that is available. When this ecosystem is sufficiently degraded, they will go elsewhere or die-off. Species diversity among wildlife is extremely important in the maintenance of healthy populations. Decreasing both horizontal and vertical vegetation can have long-term ramifications throughout the entire food chain system.

VII. REHABILITATION OF RIPARIAN ECOSYSTEMS:

Identify the Program and its Cause:

In the rehabilitation of riparian ecosystems, there are several points to consider. The first step is to identify the specific impact occurring in the ecosystem and then identify the cause of the impact. Because everything is extremely interrelated, an impact to a riparian ecosystem can occur miles from the actual cause. For example, soil and vegetation disturbances at the headwaters of mountain streams have been known to cause major problems downstream resulting from an increase in sediment load. Unless the cause of the impact is properly identified, measures for rehabilitation taken within the riparian ecosystem may not solve the problem.

Define Rehabilitation Goals:

Another point to take into consideration is the overall productive potential of the riparian ecosystem. Not all riparian ecosystems are equal. There are varying degrees of potential based upon the uses of an area and the type of soil, water, vegetation and land forming processes that are occurring. Much of the rehabilitation program will depend on the quality of the habitat, its potential, and its immediate and long-term values to people who are managing the site. In this way, the riparian ecosystem will recover to a level of desired future condition as it relates to the area potential and management objectives.

Riparian ecosystems are remarkably dynamic and transient because of the constant high nutrient water source available. With long growing seasons available to many riparian ecosystems, areas will respond quickly with proper management based upon the desired future condition.

Interdisciplinary Team Approach:

The use of an interdisciplinary team is extremely important because of the complexity involved in riparian management. Input from hydrologists, soil scientists, range conservationists, fisheries biologists, wildlife biologists, ecologists, and various land managers and users should all be essential elements in determining the problem, the cause, the area potential, desired future condition, and the methods of rehabilitation to be used. Once input from all these disciplines is thoroughly studied, one or all of the team members may be involved in the actual design and implementation of the rehabilitation methods.

Development of Rehabilitation Plan:

The rehabilitation plan needs to be carefully developed. In the past many environmental impacts were handled with short-term reactive approaches which may or may not have eliminated the over all problem. The need for managing riparian ecosystems as part of an entire habitat approach is becoming increasingly important. Understanding the interrelationships and natural processes that occur within an ecosystem or watershed will greatly affect the success or failure of management practices and rehabilitation efforts.

Rehabilitation needs to occur at the head waters and progress downstream. Often an upstream problem is causing a downstream problem. There are many techniques that can be used in restoring riparian ecosystems to their desired status.

Specific Techniques to Minimize Impacts:

The agriculture industry can help control sedimentation into streams by practicing no or minimal tillage contour farming, terracing, building diversion ditches, and grassing waterways. Where pesticides are used, farmers can minimize their impact by applying pesticides only when necessary, use those that are short-lived and biodegradable, avoid application near streams or drainage ditches, and properly dispose of old or unused pesticides and their containers.

In the mining industry, specific location of the mine needs to be considered along with the type of mineral to be mined and the potential for release of toxic pollutants that may result from the activity. There are strict guidelines that are set by the National Environmental Policy Act of 1969 and any mining activity must work within these guidelines. An environmental field analysis and impact study conducted before any mining activity occurs helps to reduce the impact to riparian ecosystems. Mine waste control and treatment, stream channelization, and the location and construction of tailing ponds are a few of the aspects considered when developing a plan for mining activity.

Livestock grazing impacts within riparian ecosystems can be minimized through regulation of riparian plan use and the time of year use is made. Most methods that encourage animal distribution into adjacent upland areas, such as strategically placed watering sources, salting areas, and improved forage seedings, can reduce impacts from livestock within

riparian ecosystems. In some instances, specially designed riparian pastures which provide for noncontinuous livestock grazing are the only acceptable alternatives. Due to the uniqueness of each situation, specific approaches must be developed for each setting. These approaches are intended to meet agreed upon objectives, such as reducing impact on riparian vegetation, minimizing soil compaction, reducing water quality deterioration, or minimizing streambank breakage which may occur as a result of livestock grazing.

When constructing roads, long-range plans need to be made that involve the entire watershed. Building roads away from stream channels on stable well drained ground will help minimize the impact to riparian ecosystems.

In timber harvesting, roads, skid trails, landings, and other facilities should be kept at a prescribed distance from streams. Some harvesting within riparian ecosystems may be allowed as long as the desired future condition of the area can be maintained and the riparian dependent resources are recognized. When roads are no longer needed, they should be closed and revegetated to the natural condition.

Impacts from recreational use within riparian ecosystems can be minimized in several ways. Campgrounds and picnic areas can be developed away from riparian ecosystems. Hardening trails and parking areas with pavement can help localize visitor impact. Using a rest rotation method of opening another recreation site nearby can help disperse visitor use and support the restoration of vegetative communities within the riparian ecosystem.

Revegetative Techniques:

A variety of revegetative techniques are available to restore bank stability and decrease erosion from denuded banks. The building of appropriate bank stabilization and instream structures can be used to decrease stream velocity, reduce sedimentation, and erosion of streambanks. Fish ladders can be built to help restore access to upstream fisheries habitat. It is important to note though, that the use of these structures is generally expensive and time consuming. If proper management techniques are utilized, the need for these remedies may not be necessary. In all cases, the cause of the riparian degradation should be resolved before investments in structural or nonstructural improvement are made.

VIII. EXISTING AND FUTURE RIPARIAN MANAGEMENT POLICIES OF THE UNITED STATES FOREST SERVICE:

Background:

Bound by legislative and executive orders from the Organic Administration Act of 1897, protection of riparian ecosystems is a high priority because of their ability to support the quality and productivity of soil and water resources. As water becomes increasingly scarce,

there is preferential consideration given to resources that are dependent upon riparian ecosystems for at least part of their life cycle when conflicts among land use activities occur.

Riparian ecosystems have no ownership boundaries other than those that are created by people. This greenbelt of land may pass through several different factions of ownership and the quality and uses of the area may differ along the same water source depending upon individual needs and uses.

Integrated Ecosystem Approach:

It becomes increasingly evident that the management of these areas can no longer be conducted in isolated sections based upon ownership. Anything occurring upstream does affect downstream habitat. With this in mind, the Forest Service is responding to the management of riparian ecosystems with an integrated approach. By understanding the interrelationships between the aquatic habitat, the uplands, sagebrush, and riparian ecosystems, which predominate National Forest land, riparian ecosystems are managed as part of a natural system that has been existing for thousands or even millions of years. This is why the use of an interdisciplinary team is so essential in establishing solid integrated resource management plans.

Management Plan Development:

Each National Forest has been developing land management plans that contain standards and guidelines which, when implemented, will lead to more healthy riparian ecosystems. These guidelines deal with all aspects of resource management activities that occur on National Forest land. These include timber, recreation, mining, grazing, road construction, and the maintenance of fish and wildlife populations. Here again, the team approach can greatly assist forest managers in the analysis and implementation of rehabilitation methods which will improve degraded riparian ecosystems.

Interagency Approach:

The Forest Service understands how essential it is to work with other Federal and state agencies and private landowners to properly manage and maintain quality riparian ecosystems. It is the Agency's desire to develop partnerships with the various agencies and users of the National Forests to restore degraded riparian areas and to promote proper management for future generations.

Program Development:

A clear statement of the Forest Service's commitment to improve the quality of riparian ecosystems can be seen in the development of the Riparian Action Program which was developed in the Intermountain Region in 1988. This document addresses riparian management in the Intermountain Region by identifying key issues involved in riparian management and a statement of goals and objectives to work with these issues.

Key Issues of the Riparian Action Program are:

The need for internal and external understanding, cooperation, and coordination when using the Forest Service's resource management approach.

The need to address adverse impacts by the Forest Service's management activities on the riparian dependent resources, aquatic habitats, and fisheries.

The need for a more unified approach to the classification and inventory of riparian areas so management, both internally and externally, can be more integrated and unified.

Goal Statements of the Riparian Action Program are:

To provide for Regional direction and guidance in riparian management through an interdisciplinary approach.

To provide for the recognition of riparian dependent resource values in the day-to-day management of National Forest Systems lands with the Intermountain Region.

Through Forest Service management activities, maintain or improve the riparian ecosystem condition.

To provide an increase in the understanding and awareness, both within the Agency and public sector, of the riparian values and issues involved in multi-use management and quality land stewardship.

Objectives of the Riparian Action Program are:

Increase internal awareness of and commitment to riparian ecosystem management and related issues.

Increase external awareness of the Intermountain Region's efforts in riparian ecosystem management.

To provide the Intermountain Region with needed policy and direction for riparian ecosystem management.

Consolidate ways riparian ecosystems are identified and classified within the Intermountain Region.

Develop riparian demonstration areas within each National Forest.

Through the interdisciplinary approach, revise where necessary, standards and guidelines in all the National Forests in the Intermountain Region so there is clearer protection and improvement of riparian ecosystems.

The Riparian Action Program created this year spans a 5-year period in which to implement all the actions necessary to meet the prescribed goals and objectives. The Forest Service believes a partnership approach, working with public and private agencies and individuals, is the key to appropriate conservation of the riparian resources.

IX. PHILOSOPHICAL DIFFERENCES AMONG FOREST USERS AND WAYS TO MINIMIZE CONFLICT:

Philosophical Differences:

It becomes evident where there is water involved, that there is potential conflict over the user priority. The Forest Service gives preference to those resources that are dependent upon riparian habitat for at least part of their life cycle. Philosophical differences among both agencies and individuals can cause misunderstanding and conflict among any of the user activities within the National Forests.

We are in the process of refocussing our relationship with nature from one of seeing only individual parts to seeing the relationships within whole ecosystems. Any impact on the immediate environment eventually effects a whole system.

There are many people who enjoy the many benefits that are provided by National Forests. There are both opportunities for activities that provide economic gains and for activities that are recreational in nature.

Riparian ecosystems are high in demand as they span many resources. It is often difficult for people to understand how they as an individual can affect the quality of this ecosystem. Its equally difficult for people to understand how the diversion of water from one area of a National Forest can affect habitat miles downstream, or how denuded streambanks, from over use of human and animal activity, can destroy healthy fisheries downstream. It is also difficult for people who live near riparian areas to see the changes that are occurring within the system over a long period of time.

Education and Awareness:

By working with individuals and other agencies, the Forest Service hopes to provide a vehicle for new understanding that is not conflict oriented and provides awareness about the effects of impact and how to reduce them. Providing education and information on the values of riparian ecosystems and discussing the ways our activities both directly and indirectly influence these areas will help greatly in changing attitudes. It is essential that the public fully understands what conservation of natural resources means in terms of the values of National Forests and how they are managed. It is also important that the public understand there are Forest Service personnel available to provide education and information on riparian issues to help in the management of lands within the boundaries, on the boarders, and outside National Forests.